Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for routing Virtual Tributary (VT) **[[VT]]** circuits over a SONET/SDH network, wherein the method can be performed by a single Network Element (NE) **[[NE]]**, comprising:

identifying a first NE that supports VT cross connections;

identifying a second NE that supports VT cross connections;

creating a Synchronous Transport Signal (STS) **[[an STS]]** circuit connection between said first and said second NE; and

routing a VT circuit between said two NEs over said STS circuit connection.

Claim 2 (original): The method of claim 1 wherein the VT circuit traverses one or more NE intermediate to said first and second NE.

Claim 3 (original): The method of claim 2 wherein at least one of said intermediate NE does not provide VT cross connection capability.

Claim 4 (original): The method of claim 2 wherein available VT cross connections on at least one of said intermediate NE are not utilized.

Claim 5 (currently amended): The method of claim 1 wherein said VT circuit is VT1.5 circuit or a larger VT circuit and said STS circuit is an STS-1 circuit or larger STS circuit, and wherein if said STS circuit is said **[[a]]** STS-1 circuit, said STS-1 circuit is **[[being]]** able to route up to 28 VT1.5 circuits.

Claim 6 (original): The method of claim 1 wherein said method is performed manually by a user or is performed automatically by routing and provisioning software.

Claim 7 (currently amended): A method for routing VT circuits in a SONET network without requiring or utilizing VT cross connections on one or more intermediate NE, and wherein the method can be performed by a single NE, comprising:

creating an STS pipe between a first NE and a second NE, said first and second NE providing VT cross connection capability, and said STS pipe traversing at least one intermediate NE; and

routing through and within said STS pipe at least one [[1]] and up to 28 VT1.5 circuits between said first NE and said second NE, said VT circuits traversing said at least one intermediate NE on which VT cross connections are not utilized.

Claim 8 (currently amended): The method of claim 7 wherein said routing of said at least one VT1.5 [[VT]] circuit through and within said STS pipe is accomplished by the following:

inserting said **[[a]]** VT circuit into said STS pipe at said first NE by a cross connection at said first NE; and

extracting the VT circuit from said STS pipe at said second NE by a cross connection at said second NE.

Claim 9 (currently amended): The method of claim 7 wherein [[none of]] the at least one intermediate node does not **[[nodes]]** support or provide VT capability.

Claim 10 (original): The method of claim 7 wherein said VT circuit is a VT1.5 circuit or a larger VT circuit and said STS pipe is an STS-1 pipe or larger STS pipe, and wherein if said STS pipe is a STS-1 pipe, said STS-1 pipe being able to route up to 28 VT1.5 circuits.

Claim 11 (currently amended): A method for routing Virtual Tributary (VT) **[[VT]]** circuits over Synchronous Transport Signal (STS) **[[STS]]** connections in a SONET network, wherein the method can be performed by a single Network Element (NE) **[[NE]]**, comprising:

creating a VT ingress interface VT-STS cross connection at a first NE;

creating **[[an]]** a VT egress interface STS-VT cross connection at a second NE;

creating an STS circuit originating at said first NE and terminating at said second NE, said STS circuit traversing at least one intermediate NE; and

routing a VT circuit between said first and second NE such that the VT circuit enters said ingress cross connection, exits said egress cross connection, and is carried within said STS circuit.

Claim 12 (original): The method of claim 11 wherein VT cross connections are not utilized on at least one of said intermediate NE.

Claim 13 (original): The method of claim 11 wherein VT cross connections are not utilized on any of the intermediate NE and the VT circuit traverses multiple NE without requiring VT cross connections.

Claim 14 (currently amended): The method of claim 11 wherein said routing of said VT circuit **[[circuits]]** over STS connections is bi-directional and further comprises:

routing said **[[a]]** VT circuit between said second and said first NE such that the VT circuit enters said egress cross connection, exits said ingress cross connection, and is carried within said STS circuit.

Claim 15 (currently amended): The method in claim 11 wherein said STS circuit **[[pipe]]** is dedicated for and used to route only VT circuits and is represented as a single link between the first **[[source]]** NE and the second **[[destination]]** NE in a VT network topology.

Claim 16 (currently amended): A computer program embodied on a computer readable medium for routing Virtual Tributary (VT) **[[VT]]** circuits over a SONET network wherein each code segment can be stored on and executed by a single Network Element (NE) **[[NE]]** comprising:

a code segment for identifying a first NE that supports VT cross connections;

a code segment for identifying a second NE that supports VT cross connections;

a code segment for creating a Synchronous Transport Signal **[[an STS]]** circuit connection between said first and said second NE; and

a code segment for routing a VT circuit between said first NE and said second NE **[[two NEs]]** over said STS circuit connection.

Claim 17 (original): The computer program of claim 16 wherein said VT circuit traverses one or more NE intermediate to said first and second NE.

Claim 18 (original): The computer program of claim 17 wherein at least one of said intermediate NE does not provide VT cross connection capability.

Claim 19 (original): The computer program of claim 17 wherein available VT cross connections on at least one of said intermediate NE are not utilized.

Claim 20 (currently amended): The computer program of claim 16 wherein said VT circuit is a VT1.5 circuit and said STS circuit connection is an STS-1 circuit, said STS-1 circuit being able to route up to 28 VT1.5 circuits.

Claim 21 (currently amended): A computer program embodied on a computer readable medium for routing Virtual Tributary (VT) **[[VT]]** circuits in a SONET network without requiring or utilizing VT cross connections on one or more intermediate Network Elements (NEs) **[[NE]]**, and wherein each code segment can be stored on and executed by a single Network Element (NE) **[[NE]]**, comprising:

a code segment for creating a Synchronous Transport Signal (STS) **[[an STS]]** pipe between a first NE and a second NE, said first and second NE providing VT cross connection capability, and said STS pipe traversing at least one intermediate NE; and

a code segment for routing through and within said STS pipe at least one **[[1]]** and up to 28 VT1.5 circuits between said first NE and said second NE, said at least one VT1.5 **[[VT]]** circuits traversing said at least one intermediate NE on which VT cross connections are not utilized.

Claim 22 (currently amended): The computer program of claim 21 wherein said routing of said at least one VT1.5 **[[VT]]** circuit through and within said STS pipe is accomplished by:

a code segment for inserting a VT circuit into said STS pipe at said first NE by a cross connection at said first NE; and

a code segment for extracting the VT circuit from said STS pipe at said second NE by a cross connection at said second NE.

Claim 23 (original): The computer program of claim 21 wherein said code segment for routing a VT circuit through and within said STS pipe, routes said VT circuits traversing intermediate nodes, none of which support or provide VT capability.

Claim 24 (currently amended): The computer program of claim 21 wherein ~~said VT circuit is a VT1.5 circuit and~~ said STS pipe is an STS-1 pipe.

Claim 25 (currently amended): A computer program embodied on a computer readable medium for routing Virtual Tributary (VT) **[[VT]]** circuits over Synchronous Transport Signal **[[STS]]** connections in a SONET network wherein each code segment can be stored on and executed by a single Network Element (NE) **[[NE]]** comprising:

a code segment for creating a VT ingress interface VT-STS cross connection at a first NE;

a code segment for creating **[[an]]** a VT egress interface STS-VT cross connection at a second NE;

a code segment for creating an STS circuit originating at said first NE and terminating at said second NE, said STS circuit traversing at least one intermediate NE; and

a code segment for routing a VT circuit between said first and second NE such that the VT circuit enters said ingress cross connection, exits said egress cross connection, and is carried within said STS circuit.

Claim 26 (original): The computer program of claim 25 wherein VT cross connections are not utilized on at least one of said intermediate NE.

Claim 27 (original): The computer program of claim 25 wherein VT cross connections are not utilized on any of the intermediate NE and the VT circuit traverses multiple NE without requiring VT cross connections.

Claim 28 (original): The computer program of claim 25 wherein said computer program provides for bi-directional routing of VT circuits over STS connections and further comprises:

a code segment for routing a VT circuit between said second and said first NE such that the VT circuit enters said egress cross connection, exits said ingress cross connection, and is carried within said STS circuit.

Claim 29 (currently amended): The computer program of claim 25 wherein said STS circuit is dedicated for and used to route only VT circuits and which further comprises a code segment for representing and adding said STS circuit to a VT network topology, as a single link between the first **[[source]]** NE and the second **[[destination]]** NE.

Claim 30 (currently amended): A system for flexibly routing Virtual Tributary (VT) **[[VT]]** circuits over Synchronous Transport Signal (STS) **[[STS]]** circuit connections comprising:

a Network Management System (NMS) for routing one or more STS circuits and for routing VT circuits over said one or more STS circuits;

a first Network Element (NE) **[[NE]]** that supports VT cross connections and allows one or more VT circuits to be added or extracted from an STS circuit that terminates at said first NE; and

a second NE that supports VT cross connections and allows one or more VT circuits to be added or extracted from an STS circuit that terminates at said first **[[NE;]]** NE wherein said NMS routes an STS circuit between said first and said second NE and said NMS routes one or more VT circuits within said STS circuit.

Claim 31 (cancelled)

Claim 32 (currently amended): The system of claim 30 **[[31]]** wherein said STS circuit traverses one or more intermediate NE that do not provide or utilize VT cross connect capability.

Claim 33 (currently amended): The system of claim 30 **[[31]]** wherein said routing of a VT circuit within said STS circuit is bi-directional with one VT circuit being added to said STS circuit at said first NE and extracted from said STS circuit at said second NE and another

VT circuit being added to said STS circuit at said second NE and extracted from said STS circuit at said first NE.

Claim 34 (currently amended): The system of claim 30 **[[31]]** wherein said **[[NMS]]** routing said VT circuits is performed automatically by the NMS routing software or manually by a user.

Claim 35 (currently amended): A system comprising one or more Network Elements (NE) for terminating Synchronous Transport Signal (STS) **[[STS]]** pipes such that Virtual Tributary (VT) **[[VT]]** circuits can be flexibly inserted into and extracted from said terminating STS pipes, each NE comprising:

a plurality of interface cards for receiving and transmitting circuits to and from the NE respectively;

a cross connect card for cross connecting said received and transmitted circuits; and

a timing and control card (TCC) which creates one or more STS circuit terminations at the NE such that one or more VT circuits can be added to or extracted from said one or more STS circuit terminations **[[termination]]**, wherein said one or more STS circuit terminations comprises a VT ingress/egress interface VT-STS connection object (VtAdit).

Claim 36 (cancelled)

Claim 37 (currently amended): The system of claim 35 by which VT circuits are routed, over STS pipes, between said NEs by adding a VT circuit to an **[[a said]]** STS circuit termination of said one or more STS circuit terminations at a first NE and extracting the VT circuit from a said STS circuit termination at a second NE, said VT circuit being carried within an STS pipe, said STS pipe terminating at said first and second NE STS terminations.

Claim 38 (original): The system of claim 37 wherein said STS pipe traverses one or more intermediate nodes at which VT cross connections are not utilized or which do not support VT cross connections.

Claim 39 (currently amended): The system of claim 37 wherein said STS pipe is dedicated for and used to route only VT circuits and is represented as a single link between the first **[[source]]** NE and the second **[[destination]]** NE in a VT network topology.

Claim 40 (currently amended): An apparatus for routing Virtual Tributary (VT) **[[VT]]** circuits over a SONET/SDH network, and wherein each of the following means is effected by a single network element (NE), comprising:

a means for identifying a first NE that supports VT cross connections;

a means for identifying a second NE that supports VT cross connections;

a means for creating a Synchronous Transport Signal (STS) **[[an STS]]** circuit connection between said first and said second NE; and

a means for routing a VT circuit between said two NEs over said STS circuit connection.

Claim 41 (original): The apparatus of claim 40 wherein the VT circuit traverses one or more NE intermediate to said first and second NE and in which one or more of said intermediate NE does not provide VT cross connection capability or for which VT capability is not utilized.

Claim 42 (original): The apparatus of claim 41 wherein said VT circuit is a VT1.5 circuit or a larger VT circuit and said STS circuit is an STS-1 circuit or larger STS circuit, and wherein if said STS circuit is a STS-1 circuit, said STS-1 circuit being able to route up to 28 VT1.5 circuits.

Claim 43 (original): The apparatus of claim 40 wherein said creating of said STS circuit and routing of said VT circuit is performed manually by a user or is performed automatically by routing and provisioning software.

Claim 44 (currently amended): An apparatus for routing Virtual Tributary (VT) **[[VT]]** circuits in a SONET network without requiring or utilizing VT cross connections on one or more intermediate Network Element (NE) **[[NE]]**, and wherein each of the following means is effected by a single NE **[[network element (NE)]]**, comprising:

means for creating a Synchronous Transport Signal (STS) **[[an STS]]** pipe between a first NE and a second NE, said first and second NE providing VT cross connection capability, and said STS pipe traversing at least one intermediate NE; and

a means for routing through and within said STS pipe at least one **[[1]]** and up to 28 VT1.5 circuits between said first NE and said second NE, said at least one VT1.5 **[[VT]]** circuits traversing said at least one intermediate NE on which VT cross connections are not utilized.

Claim 45 (currently amended): The apparatus of claim 44 wherein said routing of said at least one VT1.5 **[[VT]]** circuit through and within said STS pipe is accomplished by:

means for inserting a VT circuit into said STS pipe at said first NE by a cross connection at said first NE; and

means for extracting the VT circuit from said STS pipe at said second NE by a cross connection at said second NE.

Claim 46 (original): The apparatus of claim 44 wherein none of the intermediate nodes support or provide VT capability.

Claim 47 (currently amended): An apparatus for routing Virtual Tributary (VT) **[[VT]]** circuits over Synchronous Transport Signal (STS) **[[STS]]** connections in a SONET network, and wherein each of the following means is effected by a single network element (NE), comprising:

means for creating a VT ingress interface VT-STS cross connection at a first NE;

means for creating **[[an]]** a VT egress interface STS-VT cross connection at a second NE;

means for creating an STS circuit originating at said first NE and terminating at said second NE, said STS circuit traversing at least one intermediate NE; and

means for routing a VT circuit between said first and second NE such that the VT circuit enters said ingress cross connection, exits said egress cross connection, and is carried within said STS circuit.

Claim 48 (original): The apparatus of claim 47 wherein VT cross connections are not utilized on any of the intermediate NE and the VT circuit traverses multiple NE without requiring VT cross connections.

Claim 49 (original): The apparatus of claim 47 wherein said routing of VT circuits over STS connections is bi-directional and further comprises:

means for routing a VT circuit between said second and said first NE such that the VT circuit enters said egress cross connection, exits said ingress cross connection, and is carried within said STS circuit.

Claim 50 (currently amended): The apparatus of claim 47 wherein said STS circuit **[[pipe]]** is dedicated for and used to route only VT circuits and is represented as a single link between the first **[[source]]** NE and the second **[[destination]]** NE in a VT network topology.

SUBSTITUTE CLAIMS

What is claimed is:

1. A method for routing VT circuits over a SONET/SDH network, wherein the method can be performed by a single NE, comprising:

identifying a first NE that supports VT cross connections;

identifying a second NE that supports VT cross connections;

creating an STS circuit connection between said first and said second NE; and

routing a VT circuit between said two NEs over said STS circuit connection.

2. The method of claim 1 wherein the VT circuit traverses one or more NE intermediate to said first and second NE.

3. The method of claim 2 wherein at least one of said intermediate NE does not provide VT cross connection capability.

4. The method of claim 2 wherein available VT cross connections on at least one of said intermediate NE are not utilized.

5. The method of claim 1 wherein said VT circuit is VT1.5 circuit or a larger VT circuit and said STS circuit is an STS-1 circuit or larger STS circuit, and wherein if said STS circuit is a STS-1 circuit, said STS-1 circuit being able to route up to 28 VT1.5 circuits.

6. The method of claim 1 wherein said method is performed manually by a user or is performed automatically by routing and provisioning software.

7. A method for routing VT circuits in a SONET network without requiring or utilizing VT cross connections on one or more intermediate NE, and wherein the method can be performed by a single NE, comprising:

creating an STS pipe between a first NE and a second NE, said first and second NE providing VT cross connection capability, and said STS pipe traversing at least one intermediate NE; and

routing through and within said STS pipe at least 1 and up to 28 VT1.5 circuits between said first NE and said second NE, said VT circuits traversing said at least one intermediate NE on which VT cross connections are not utilized.

8. The method of claim 7 wherein said routing of said at least one VT circuit through and within said STS pipe is accomplished by the following:

inserting a VT circuit into said STS pipe at said first NE by a cross connection at said first NE; and

extracting the VT circuit from said STS pipe at said second NE by a cross connection at said second NE.

9. The method of claim 7 wherein none of the intermediate nodes support or provide VT capability.

10. The method of claim 7 wherein said VT circuit is a VT1.5 circuit or a larger VT circuit and said STS pipe is an STS-1 pipe or larger STS pipe, and wherein if said STS pipe is a STS-1 pipe, said STS-1 pipe being able to route up to 28 VT1.5 circuits.

11. A method for routing VT circuits over STS connections in a SONET network, wherein the method can be performed by a single NE, comprising:

creating a VT ingress interface VT-STS cross connection at a first NE;

creating an VT egress interface STS-VT cross connection at a second NE;

creating an STS circuit originating at said first NE and terminating at said second NE, said STS circuit traversing at least one intermediate NE; and

routing a VT circuit between said first and second NE such that the VT circuit enters said ingress cross connection, exits said egress cross connection, and is carried within said STS circuit.

12. The method of claim 11 wherein VT cross connections are not utilized on at least one of said intermediate NE.

13. The method of claim 11 wherein VT cross connections are not utilized on any of the intermediate NE and the VT circuit traverses multiple NE without requiring VT cross connections.

14. The method of claim 11 wherein said routing of VT circuits over STS connections is bi-directional and further comprises:

routing a VT circuit between said second and said first NE such that the VT circuit enters said egress cross connection, exits said ingress cross connection, and is carried within said STS circuit.

15. The method in claim 11 wherein said STS pipe is dedicated for and used to route only VT circuits and is represented as a single link between the source NE and the destination NE in a VT network topology.

16. A computer program embodied on a computer readable medium for routing VT circuits over a SONET network wherein each code segment can be stored on and executed by a single NE comprising:

a code segment for identifying a first NE that supports VT cross connections;

a code segment for identifying a second NE that supports VT cross connections;

a code segment for creating an STS circuit connection between said first and said second NE; and

a code segment for routing a VT circuit between said two NEs over said STS circuit connection.

17. The computer program of claim 16 wherein said VT circuit traverses one or more NE intermediate to said first and second NE.

18. The computer program of claim 17 wherein at least one of said intermediate NE does not provide VT cross connection capability.

19. The computer program of claim 17 wherein available VT cross connections on at least one of said intermediate NE are not utilized.

20. The computer program of claim 16 wherein said VT circuit is a VT1.5 circuit and said STS circuit is an STS-1 circuit, said STS-1 circuit being able to route up to 28 VT1.5 circuits.

21. A computer program embodied on a computer readable medium for routing VT circuits in a SONET network without requiring or utilizing VT cross connections on one or more intermediate NE, and wherein each code segment can be stored on and executed by a single NE, comprising:

a code segment for creating an STS pipe between a first NE and a second NE, said first and second NE providing VT cross connection capability, and said STS pipe traversing at least one intermediate NE; and

a code segment for routing through and within said STS pipe at least 1 and up to 28 VT1.5 circuits between said first NE and said second NE, said VT circuits traversing said at least one intermediate NE on which VT cross connections are not utilized.

22. The computer program of claim 21 wherein said routing of said at least one VT circuit through and within said STS pipe is accomplished by:

a code segment for inserting a VT circuit into said STS pipe at said first NE by a cross connection at said first NE; and

a code segment for extracting the VT circuit from said STS pipe at said second NE by a cross connection at said second NE.

23. The computer program of claim 21 wherein said code segment for routing a VT circuit through and within said STS pipe, routes said VT circuits traversing intermediate nodes, none of which support or provide VT capability.

24. The computer program of claim 21 wherein said VT circuit is a VT1.5 circuit and said STS pipe is an STS-1 pipe.

25. A computer program embodied on a computer readable medium for routing VT circuits over STS connections in a SONET network wherein each code segment can be stored on and executed by a single NE comprising:

a code segment for creating a VT ingress interface VT-STS cross connection at a first NE;

a code segment for creating a VT egress interface STS-VT cross connection at a second NE;

a code segment for creating an STS circuit originating at said first NE and terminating at said second NE, said STS circuit traversing at least one intermediate NE; and

a code segment for routing a VT circuit between said first and second NE such that the VT circuit enters said ingress cross connection, exits said egress cross connection, and is carried within said STS circuit.

26. The computer program of claim 25 wherein VT cross connections are not utilized on at least one of said intermediate NE.

27. The computer program of claim 25 wherein VT cross connections are not utilized on any of the intermediate NE and the VT circuit traverses multiple NE without requiring VT cross connections.

28. The computer program of claim 25 wherein said computer program provides for bi-directional routing of VT circuits over STS connections and further comprises:

a code segment for routing a VT circuit between said second and said first NE such that the VT circuit enters said egress cross connection, exits said ingress cross connection, and is carried within said STS circuit.

29. The computer program of claim 25 wherein said STS circuit is dedicated for and used to route only VT circuits and which further comprises a code segment for representing and adding said STS circuit to a VT network topology, as a single link between the source NE and the destination NE.

30. A system for flexibly routing VT circuits over STS circuit connections comprising:

a Network Management System (NMS) for routing one or more STS circuits and for routing VT circuits over said one or more STS circuits;

a first NE that supports VT cross connections and allows one or more VT circuits to be added or extracted from an STS circuit that terminates at said first NE; and

a second NE that supports VT cross connections and allows one or more VT circuits to be added or extracted from an STS circuit that terminates at said first NE;

31. The system of claim 30 wherein said NMS routes an STS circuit between said first and said second NE and said NMS routes one or more VT circuits within said STS circuit.

32. The system of claim 31 wherein said STS circuit traverses one or more intermediate NE that do not provide or utilize VT cross connect capability.

33. The system of claim 31 wherein said routing of a VT circuit within said STS circuit is bi-directional with one VT circuit being added to said STS circuit at said first NE and extracted from said STS circuit at said second NE and another VT circuit being added to said STS circuit at said second NE and extracted from said STS circuit at said first NE.

34. The system of claim 31 wherein said NMS routing is performed automatically by the NMS routing software or manually by a user.

35. A system comprising one or more Network Elements (NE) for terminating STS pipes such that VT circuits can be flexibly inserted into and extracted from said terminating STS pipes, each NE comprising:

a plurality of interface cards for receiving and transmitting circuits to and from the NE respectively;

a cross connect card for cross connecting said received and transmitted circuits; and

a timing and control card (TCC) which creates one or more STS circuit terminations at the NE such that one or more VT circuits can be added to or extracted from said STS circuit termination.

36. The apparatus of claim 35 wherein said STS termination further comprises a VT ingress/egress interface VT-STS connection object (VtAdit).

37. The system of claim 35 by which VT circuits are routed, over STS pipes, between said NEs by adding a VT circuit to a said STS circuit termination at a first NE and extracting the VT circuit from a said STS circuit termination at a second NE, said VT circuit being carried within an STS pipe, said STS pipe terminating at said first and second NE STS terminations.

38. The system of claim 37 wherein said STS pipe traverses one or more intermediate nodes at which VT cross connections are not utilized or which do not support VT cross connections.

39. The system of claim 37 wherein said STS pipe is dedicated for and used to route only VT circuits and is represented as a single link between the source NE and the destination NE in a VT network topology.

40. An apparatus for routing VT circuits over a SONET/SDH network, and wherein each of the following means is effected by a single network element (NE), comprising:

a means for identifying a first NE that supports VT cross connections;

a means for identifying a second NE that supports VT cross connections;

a means for creating an STS circuit connection between said first and said second NE; and

a means for routing a VT circuit between said two NEs over said STS circuit connection.

41. The apparatus of claim 40 wherein the VT circuit traverses one or more NE intermediate to said first and second NE and in which one or more of said intermediate NE does not provide VT cross connection capability or for which VT capability is not utilized.

42. The apparatus of claim 41 wherein said VT circuit is a VT1.5 circuit or a larger VT circuit and said STS circuit is an STS-1 circuit or larger STS circuit, and wherein if said STS circuit is a STS-1 circuit, said STS-1 circuit being able to route up to 28 VT1.5 circuits.

43. The apparatus of claim 40 wherein said creating of said STS circuit and routing of said VT circuit is performed manually by a user or is performed automatically by routing and provisioning software.

44. An apparatus for routing VT circuits in a SONET network without requiring or utilizing VT cross connections on one or more intermediate NE, and wherein each of the following means is effected by a single network element (NE), comprising:

means for creating an STS pipe between a first NE and a second NE, said first and second NE providing VT cross connection capability, and said STS pipe traversing at least one intermediate NE; and

a means for routing through and within said STS pipe at least 1 and up to 28 VT1.5 circuits between said first NE and said second NE, said VT circuits traversing said at least one intermediate NE on which VT cross connections are not utilized.

45. The apparatus of claim 44 wherein said routing of said at least one VT circuit through and within said STS pipe is accomplished by:

means for inserting a VT circuit into said STS pipe at said first NE by a cross connection at said first NE; and

means for extracting the VT circuit from said STS pipe at said second NE by a cross connection at said second NE.

46. The apparatus of claim 44 wherein none of the intermediate nodes support or provide VT capability.

47. An apparatus for routing VT circuits over STS connections in a SONET network, and wherein each of the following means is effected by a single network element (NE), comprising:

means for creating a VT ingress interface VT-STS cross connection at a first NE;

means for creating an VT egress interface STS-VT cross connection at a second NE;

means for creating an STS circuit originating at said first NE and terminating at said second NE, said STS circuit traversing at least one intermediate NE; and

means for routing a VT circuit between said first and second NE such that the VT circuit enters said ingress cross connection, exits said egress cross connection, and is carried within said STS circuit.

48. The apparatus of claim 47 wherein VT cross connections are not utilized on any of the intermediate NE and the VT circuit traverses multiple NE without requiring VT cross connections.

49. The apparatus of claim 47 wherein said routing of VT circuits over STS connections is bi-directional and further comprises:

means for routing a VT circuit between said second and said first NE such that the VT circuit enters said egress cross connection, exits said ingress cross connection, and is carried within said STS circuit.

50. The apparatus of claim 47 wherein said STS pipe is dedicated for and used to route only VT circuits and is represented as a single link between the source NE and the destination NE in a VT network topology.